

REMARKS

Favorable consideration in view of the herewith-presented amendment and remarks is respectfully requested.

1. Claims 1-3, and 6-10 are rejected under 35 U.S.C. 102(e) as being anticipated by Tribble. Applicant has amended claim 1 to include the following limitations:

- a. hollow barrel; and
- b. the elastomeric material has a modulus of elasticity and damping factor such that the amplitude of the vibrations of the handle arising from the impact of a ball with the striking implement are reduced by at least 80% within about 0.1 seconds from the time when the vibrations first arise on the handle.

Applicant submits that these amendments do not add any new matter and are fully supported by the Specification, See Spec. pages 9, 10, 12, and 13.

Tribble fails to teach each and every element of amended claim 1 as follows. The striking implement of amended claim 1 of the present invention has a hollow barrel and a hollow handle. Tribble, to the contrary, discloses a bat having a solid wood barrel attached to a hollow metal handle. See Tribble, Spec., Col. 4, lines 47-52. The present invention does not apply to bats having solid wood barrels. Since amended claim 1 requires a hollow barrel, Tribble fails to teach or suggest every element of amended claim 1. Accordingly, Applicant respectfully requests that the rejection of claim 1 be withdrawn.

With respect to shock absorption, in the present invention the elastomeric material has a modulus of elasticity and damping factor such that the amplitude of the vibrations of the handle arising from the impact of a ball with the striking implement are reduced by at least 80% within about 0.1 seconds from the time when the vibrations first arise on the handle, whereas it is not possible for the vibrations of the Tribble bat to be significantly absorbed by an elastomer. Applicant submits herewith a declaration pursuant to 37 CFR 1.132 which provides a

quantitative analysis of the shock absorption characteristics of the present invention as well as the inability of the Tribble bat to effectively absorb the vibrations.

Applicant conducted testing through computer modeling to determine the shock absorption capabilities of hollow barrel metal bats (as in the present invention) and of solid barrel wood bats (as in the Tribble bat). Specifically, Applicant considered identical impacts between a softball and a solid barrel wood bat and a hollow barrel aluminum or composite bat. Applicant assumed that the barrels of each of the bats are terminated in a stem, as described in Tribble and in the present invention. The impact gives rise to transverse vibrations in the barrel, which are transmitted down the barrel into the handle of conventional bats, and into the stems of the bats under consideration.

Applicant's testing shows that the vibrations transferred to the stem of the solid barrel bat result in a substantially increased amplitude, making it impossible for these vibrations to be absorbed in order to reduce sting, whereas the vibrations transferred to the stem of the hollow barrel bat result in a substantially decreased amplitude, making it easy for these vibrations to be absorbed in order to reduce sting. The greater linear mass density of the solid barrel bat compared to the hollow barrel bat gives rise to this difference in vibration amplitudes in the stems. For the solid barrel bat, the linear density of the barrel is greater than that of the stem, whereas for the hollow barrel bat, the linear density of the barrel is less than that of the stem.

In tests conducted using computer modeling of the solid barrel bat and the hollow barrel bat, Applicant assumed that the vibrations set up in the barrels generated by the ball impacts have an amplitude of 0.1" and a frequency of 200 Hz. The resultant (computer generated) vibrations in the stems are shown in Figure 1 for the solid barrel bat and in Figure 2 for the hollow barrel bat.

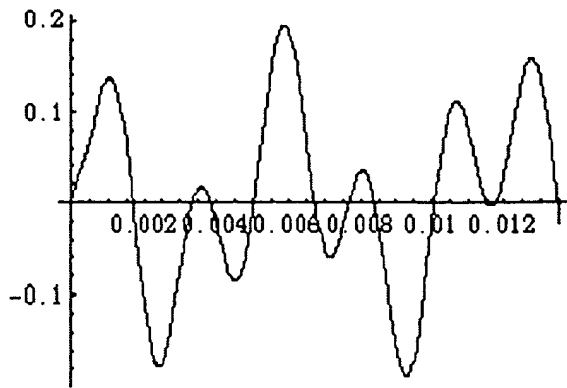


Figure 1 (solid barrel)

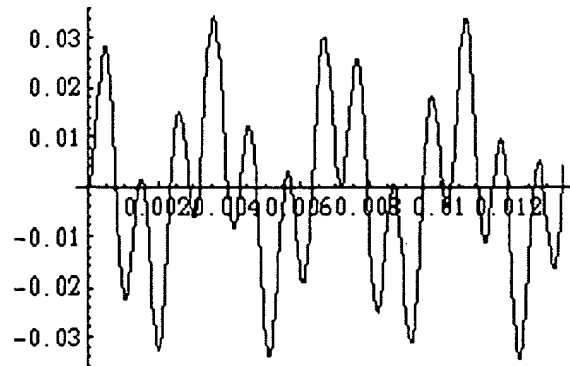


Figure 2 (hollow barrel)

For the solid barrel bat, the stem vibration amplitude is seen to be 0.2" and the frequency is seen to be 290 Hz, whereas for the hollow barrel bat, the amplitude is seen to be 0.03" and the frequency is seen to be 670 Hz. Thus the size of the vibration in the hollow barrel bat stem is 3.3 times less than the size (0.1") of the barrel vibration, and 6.6 times less than the size (0.2") of the solid barrel bat stem vibration. In other words, for the solid barrel bat, the stem mechanism worsens the sting by a factor of 2, whereas for the hollow barrel bat, the stem mechanism lessens the sting by a factor of 3.3. It is not possible for the 0.2" vibration of the solid barrel bat stem to be significantly absorbed by an elastomer. The increased vibration frequency of the hollow barrel bat is an added benefit because higher frequencies are more readily absorbed by an elastomer.

Accordingly, it is not possible for the vibration of the Tribble (solid barrel) bat to be significantly absorbed by an elastomer, whereas in the present invention (hollow barrel bat), since the sting factor has already been decreased by a factor of 3.3, the vibrations can be largely absorbed by an elastomer, and at a minimum the amplitude of the vibrations of the handle arising from the impact of a ball with the striking implement are reduced by at least 80% within about 0.1 seconds from the time when the vibrations first arise on the handle. As demonstrated by Applicant's testing, Tribble fails to teach or suggest the shock absorption capability of amended claim 1.

For the reasons stated above and supported by Applicant's declaration, Tribble fails to teach or suggest every element of claim 1. Claim 1, therefore, is not anticipated by Tribble. Applicant respectfully requests that the rejection of claim 1 be withdrawn and amended claim 1 be passed to issuance.

Dependent claims 3 and 6-10 ultimately depend from independent claim 1. Applicant respectfully submits that since claim 1 is believed to be patentable for the reasons provided above, claims 3 and 6-10 are allowable as depending from a patentable base claim. Applicant respectfully requests that this rejection be withdrawn and the claims be passed to issuance.

2. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tribble in view of Lincoln. Claim 11 depends from claim 9. Applicant respectfully submits that since claim 9 is believed to be patentable for the reasons indicated above, claim 11 is allowable as depending from a patentable base claim. Applicant respectfully requests that this rejection be withdrawn and the claim be passed to issuance.

3. Claims 4 and 5 are objected to as being dependent upon a rejected base claim. Since claims 4 and 5 depend from claim 3, and ultimately from claim 1, which claims are believed to be in condition for allowance for the reasons set forth above, Applicant respectfully submits that claims 4 and 5 are allowable as depending from a patentable base claim. Applicant requests that this objection be withdrawn and the claims be passed to issuance.

The amendments herein were not intended to and should not be construed to have been made for any reasons related to patentability of the claims.

CONCLUSION

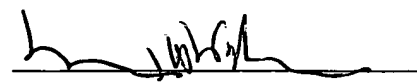
In view of the foregoing remarks, Applicant submits that this application is in condition for allowance and early favorable action is solicited.

The Commissioner is hereby authorized to charge any additional fees that may be required for this response, or credit any overpayment to Deposit Account No. 50-1628.

In the event that an extension of time may be required, the Commissioner is requested to grant a petition for that extension of time that is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to Deposit Account No. 50-1628.

If the Examiner determines that anything is necessary to place the application in better condition for allowance which Examiner believes can be handled via telephone, Applicant respectfully requests that Examiner contact the undersigned attorney at (212) 632-8435. The undersigned may also be contacted by e-mail at mwaldbaum@salans.com.

Respectfully submitted,


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